

U.S. Department of Commerce, Patent and Trademark INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Atty. Docket No.	Application No.
		TNCR.196US0	09/833,084
		Applicant(s)	
Use several sheets if necessary)		Abdulhalim et al.	
		Filing Date	Group
		4/10/01	1775

U.S. Patent Documents

U.S. Published Patent Application Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate

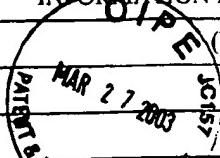
Foreign Patent Documents

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

<i>38</i>	5	Copy of PCT Written Opinion, mailed 4/11/03.
<i>38</i>	6	Copy of International Search Report, mailed 9/18/02.
		<i>38</i>

***EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Applicant(s)	Confirmation No.
(Use several sheets if necessary)		Ibrahim Abdulhalim, et al.	8866
		Filing Date	Group
		April 10, 2001	1775



U.S. Patent Documents							
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
AS	AA	4,200,395	04/29/80	Smith et al.	356	356	
CS	AB	4,332,473	01/05/82	Ono	356	356	
AS	AD	4,757,207	07/12/88	Chappelow et al.	250	491.1	RECEIVED
	AE						APR 07 2003
	AF						GROUP 1700
	AG						
	AI						
	AJ						
	AD						
	AE						
	AF						
	AG						
	AK						
	AD						
	AE						
	AG						
	AH						
	AI						

Foreign Patent Documents

Translation

		Document	Date	Country	Class	Subclass	Yes	No
31	AL	WO 01/73824 A1	10/04/01	PCT				
31	AM							

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

31	AQ	R. Pforr, et al., "In-Process Image Detecting Technique For Determination Of Overlay, And Image Quality For ASM-L Wafer Stepper", SPIE Vol. 1674 Optical/Laser Microlithography V (1992) pp. 594-608
----	----	--

Examiner *Yaslaw* Date Considered *6/7/04*

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U.S. Department of Commerce, Patent and Trademark Office			Atty Docket No.		Application No.	
			M-10703 US		09/833,084	
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JAN 15 2003 PATENT & TRADEMARK OFFICE			Ibrahim Abdulhalim		8866	
			Filing Date		Group	
			April 10, 2001		1775	
U.S. Patent Documents						
*Examiner Initial		Document Number	Publication Date	Name of Patentee or Applicant of Cited Document		Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
<i>28</i>	A1	US 2001/0192577 A1	12/19/02	Fay et al.		
Foreign Patent Documents						
		Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document		Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
<i>28</i>	B1	WO 02/065545 A2	8/22/02	Sensys Instruments Corporation		
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)						
Examiner <i>Alan S. De</i>		Date Considered <i>6/17/04</i>				
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U.S. Patent Documents

Examiner Initial		Document Number	Publication Date	Name of Patentee or Applicant of Cited Document			Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
<i>[Signature]</i>	A1	US 2001/0026366 A1	10/4/01	Nomura			
	A2	US 2002/0149782 A1	10/17/02	Raymond			
	A3	US 2002/0158193 A1	10/31/02	Sezginer et al.			
	A4						
	A5						
	A6						
	A7						
	A8						

Foreign Patent Documents

		Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document			Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T ^o
<i>[Signature]</i>	B1	WO 01/73824 A1	10/4/01	Infineon Technologies AG, Semiconductor300 GMBH & CO. KG, Motorola, Inc.				
	B2	WO 01/97279 A2	12/20/01	Advanced Micro Devices, Inc.				
	B3	WO 02/069390 A2	9/6/02	Timbre Technologies, Inc.				
	B4	WO 02/084213 A1	10/24/02	KLA-Tencor Corporation				
	B5	WO 02/15238 A2	2/21/02	Sensys Instruments Corporation				
	B6	WO 02/25708 A2	3/28/02	KLA-Tencor Corporation				
	B7	WO 02/25723 A2	3/28/02	Nova Measuring Instruments, Ltd.				
	B8	WO 02/35300 A2	5/2/02	Advanced Micro Devices, Inc.				

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

	C1	
	C2	
Examiner <i>[Signature]</i>	Date Considered <i>[Signature]</i>	*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.

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U.S. Patent Documents								
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
<i>AS</i>	AA	4,929,083	5/29/90	Brunner			3/20/89	
	AB	5,216,257	6/1/93	Brueck et al.			7/9/90	
	AC	4,703,434	10/27/87	Brunner			4/24/84	
	AD	5,712,707	1/27/98	Ausschnitt et al.			11/20/95	
	AE	5,479,270	12/26/95	Taylor			5/19/92	
	AF	5,939,226	8/17/99	Tomimatu			1/8/97	
	AG	5,923,041	7/13/99	Cresswell et al.			4/25/95	
	AH	5,912,983	6/15/99	Hiratsuka			7/25/97	
	AI	5,902,703	5/11/99	Leroux et al.			3/27/97	
	AJ	5,872,042	2/16/99	Hsu et al.			8/22/96	
<i>AS</i>	AK	5,757,507	5/26/98	Auschmitt			11/20/95	
Foreign Patent Documents								
							Translation	
		Document	Date	Country	Class	Subclass	Yes	No
	AL							
	AM							
	AN							
	AO							
	AP							
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)								
<i>AS</i>	AQ	Bishoff, J. et al., "Light Diffraction Based Overlay Measurement", <i>Proceedings SPIE</i> Vol. 4344-28(2001)						
<i>AS</i>	AR	Levinson, Harry, "Lithography Process Control", <i>SPIE Press</i> Vol. TT28 Chapter 5 (1999) pp. 87-118						
<i>AS</i>	AS	Moharam, M.G. et al., "Rigorous Coupled-Wave Analysis of Planar-Grating Diffraction", <i>J.Opt. Soc. Am.</i> 73, 1105-1112 (1983)						
Examiner	<i>J. Galante Jr.</i>		Date Considered	<i>4/17/01</i>				
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(Use several sheets if necessary)			Abdulhalim, Ibrahim; Abel, Mike; Faeyman,				
			Filing Date	Group			
OCT 17 2001			April 10, 2001				
U.S. Patent Documents							
*Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
AA	6,130,750	10/10/2000	Ausschnitt et al.			8/28/97	
AB	5,783,342	7/21/98	Yamashita et al.			12/27/95	
AC	6,023,338	2/8/2000	Bareket			7/12/96	
AD							
AE							
AF							
AG							
AH							
AI							
AJ							
AK							
Foreign Patent Documents							
						Translation	
AL						Yes	No
AM							
AN							
AO							
AP							
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
30	AQ	Sheng, P. et al., "Exact Eigenfunctions for Square Wave Gratings: Applications to Diffraction and Surface Plasmon Calculations", <i>Phys. Rev. B</i> , 2907-2916 (1982)					
30	AR	Li, L., "A Modal Analysis of Lamellar Diffraction Gratings in Conical Mountings", <i>J. Mod. Opt.</i> 40, 553-573 (1993)					
	AS						
2	Examiner	Date Considered <i>(et/21/01)</i>					
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with your communication to applicant.							

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		Ibrahim Abdulhalim, et al.			8866			
		Filing Date			Group			
		April 10, 2001			1775			
U.S. Patent Documents								
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
<i>[initial]</i>	1	6,699,624	Mar. 2, 2004	Niu et al.				
<i>[initial]</i>	2	6,699,627	Mar. 2, 2004	Smith et al.				
<i>[initial]</i>	3	6,699,630	Mar. 2, 2004	Ota				
U.S. Published Patent Application Documents								
*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate	
Foreign Patent Documents								
							Translation	
		Document	Date	Country	Class	Subclass	Yes	No
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<i>[Signature]</i>	Date Considered	<i>6/7/01</i>						
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3/12/04

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		Applicant(s) Ibrahim Abdulhalim, et al.	Conf. N . 8866
(Use several sheets if necessary)		Filing Date April 10, 2001	Group 1775

OTHER ART - con. (Including Author, Title, Date, Pertinent Pages, Etc.)

<i>38</i>	84	"Automatic In-Situ Focus Monitor Using Line Shortening Effect", Journal: Proceedings of the SPIE, vol. 3677, pt. 1-2. p. 184-93 (Abstract)
	85	"Characterization and Monitoring of Variable NA and Variable Coherence Capable Photo Steppers Utilizing the Phase Shift Focus Monitor Reticule", Journal: Proceedings of the SPIE, vol. 2439, p. 61-9. (Abstract)
	86	"Modeling of Optical Scatterometry with Finite-Number-of-Periods Grating", Journal: Proceedings of the SPIE, vol. 3743, p. 41-8. (Abstract)
	87	"Grazing Incidence Diffraction By Laterally Patterned Semiconductor Nanostructures", Journal: Journal of Physics, vol. 32 no. 6, p. 726-40. (Abstract)
	88	"A Mask-to-Wafer* Alignment and Gap Setting Method for E-Ray Lithography Using Gratings", Journal: Journal of Vacuum Science & Technology B. vol. 9, no. 6. p. 3202-6. (Abstract) ✓
	89	"Diffraction and Interference Optics for Monitoring Fine Dimensions in Device Manufacture", Solid State Devices, 1983. (Abstract)
	90	"Performance of New Overlay Measurement Mark", Sung-Man Bae and Ki-Ho Baik, SPIE, vol. 2725 p. 424-435.
	91	"Automatic Classification of Spatial Signatures on Semiconductor Wafermaps", Tobin et al., SPIE, vol. 3050, p. 434-444.
	92	"Kinetics of the Diffraction Efficiency of Light-Induced Dynamic Gratings in Layers of Disordered Semiconductors", Arkhipov et al., Quantum Electron, vol. 23, November 1993, p. 986-988.
	93	"Optimal Sampling Strategies for sub-100 nm Overlay", Rangarajan et al., SPIE, vol. 3332, p. 348-359.
	94	"Super Sparse Overlay Sampling Plans: An Evaluation of Methods and Algorithms for Optimizing Overlay Quality Control and Metrology Tool Throughput", Pellegrini et al., SPIE, vol. 3677, p. 72-82, March 1999.
	95	"Comparison of Optical, SEM and SFM Overlay Measurement", Jaiprakash and Gould SPIE. Vol. 3677, p. 229-238, March 1999.
	96	"Formation of Periodic Diffraction Structures at Semiconductor Surfaces for Studying the Dynamics of Photoinduced Phase Transitions", Fattakhov et al., Optics and Spectroscopy, vol. 89, p. 136-142 (2000)
	97	"Photoreactive Optical Properties of Volume Phase Gratings Induced in Sillenite Crystals, When The Grating Vector Lies on the (111) Plane", Papzoglou et al., Applied Physics B 71, p. 841-848 (2000)
<i>38</i>	98	"Minimization of Total Overlay Errors on Product Wafers Using an Advanced Optimization Scheme", Levinson et al., SPIE, p. 362-73. (Abstract)

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U.S. Department of Commerce, Patent and Trademark INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>MAR 05 2004</i>		Atty. Docket No. TNCR.196US0	Application No. 09/833,084
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U.S. Published Patent Application Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
<i>BB</i>	63	2002/00072001	Jun. 13, 2002	Brown et al.			
<i>BB</i>	64	2003/0002043	Jan. 2, 2003	Abdulhalim et al.			
<i>BB</i>	65	2003/0020184	Jan. 30, 2003	Ballarin			

Foreign Patent Documents

		Document	Date	Country	Class	Subclass	Translation Yes	No
<i>BB</i>	66	WO03042629	May 22, 2003	WIPO				
<i>BB</i>	67	WO02/050509	Jun. 27, 2002	WIPO				
<i>BB</i>	68	WO99/45340	Sep. 10, 1999	WIPO				
<i>BB</i>	69	WO03001297	Jan. 3, 2003	WIPO				
<i>BB</i>	70	WO0184382	Nov. 8, 2001	WIPO				
<i>BB</i>	71	WO0218871	Mar. 7, 2002	WIPO				
<i>BB</i>	72	WO03054475	Jul. 3, 2003	WIPO				
<i>BB</i>	73	WO95/02200	Jan. 19, 1995	WIPO				
<i>BB</i>	74	WO 99/56174	Nov. 4, 1999	WIPO				
<i>BB</i>	75	WO85/04266	Sep. 26, 1985	WIPO				
<i>BB</i>	76	JP60126881	Jul. 6, 1985	Japan			Abstract	
<i>BB</i>	77	JP11086332	Mar. 30, 1999	Japan			Abstract	
<i>BB</i>	78	JP63-243804	Oct. 11, 1988	Japan			Abstract	

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

<i>BB</i>	79	"Phase-Sensitive Overlay Analysis Spectrometry", IBM TDB, March 1990.
<i>BB</i>	80	"Interferometric Method of Checking the Overlay Accuracy in Photolithographic Exposure Processes", IBM TDB, March 1990.
<i>BB</i>	81	"Interferometric Measurement System for Overlay Measurement in Lithographic Processes", IBM TDB, Feb. 1994.
<i>BB</i>	82	"Mask Overlay Determination", IBM TDB, Dec. 1978.
<i>BB</i>	83	"Width and Overlay Narrow Kerf Test Site", IBM TDB, April 1978

U.S. Department of Commerce, Patent and Trademark INFORMATION DISCLOSURE STATEMENT BY APPLICANT MAR 05 2004		Atty. Docket N .	Application No.
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U.S. Patent Documents

*Examiner Initial		Document Number	Date	Name	Class	Subclass	Filing Date If Appropriate
	1	4,103,998	Aug. 1, 1978	Nakazawa et al.			
	2	4,167,337	Sep. 11, 1979	Jaerisch et al.			
	3	4,631,416	Dec. 23, 1986	Trutna, Jr.			
	4	4,750,836	Jun. 14, 1988	Stein			
	5	4,818,110	Apr. 4, 1989	Davidson			
	6	4,820,055	Apr. 11, 1989	Muller			
	7	4,828,392	May 9, 1989	Nomura et al.			
	8	4,848,911	Jul. 18, 1989	Uchida et al.			
	9	4,929,083	May 29, 1990	Brunner			
	10	4,999,014	Mar. 12, 1991	Gold et al.			
	11	5,112,129	May 12, 1992	Davidson et al.			
	12	5,114,235	May 19, 1992	Suda et al.			
	13	5,166,752	Nov. 24, 1992	Spanier et al.			
	14	5,172,190	Dec. 15, 1992	Kaiser			
	15	5,182,455	Jan. 26, 1993	Muraki			
	16	5,182,610	Jan. 26, 1993	Shibata			
	17	5,189,494	Feb. 23, 1993	Muraki			
	18	5,316,984	May 31, 1994	Leroux			
	19	5,327,221	Jul. 5, 1994	Saitoh et al.			
	20	5,340,992	Aug. 24, 1994	Matsugu et al.			
	21	5,343,292	Aug. 30, 1994	Brueck et al.			
	22	5,414,514	May 9, 1995	Smith et al.			
	23	5,465,148	Nov. 7, 1995	Matsumoto et al.			
	24	5,525,840	Jun. 11, 1996	Tominaga			
	25	5,596,406	Jan. 21, 1997	Rosenengaig et al.			
	26	5,596,413	Jan. 21, 1997	Stanton et al.			
	27	5,608,526	Mar. 4, 1997	Piwonka-Corle et al.			
	28	5,666,196	Sep. 9, 1997	Ishii et al.			
	29	5,739,909	Apr. 14, 1998	Blayo et al.			
	30	5,801,390	Sep. 1, 1998	Shiraishi			

U.S. Department of Commerce, Patent and Trademark INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Atty. Docket No.	Application No.
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U.S. Patent Documents (con.)

31	5,883,710	Mar. 16, 1999	Nikoonahad et al.
32	5,889,593	Mar. 30, 1999	Bareket
33	5,909,333	Jun. 1, 1999	Best et al.
34	5,910,841	Jun. 8, 1999	Masao
35	5,912,983	Jun. 15, 1999	Hiratsuka
36	5,923,041	Jul. 13, 1999	Cresswell et al.
37	6,013,355	Jan. 11, 2000	Chen et al.
38	6,046,094	Apr. 4, 2000	Jost et al.
39	6,077,756	Jun 20, 2000	Lin et al.
40	6,079,256	Jun. 27, 2000	Bareket
41	6,081,325	Jun. 27, 2000	Leslie et al.
42	6,128,089	Oct. 3, 2000	Ausschnitt et al.
43	6,134,011	Oct. 17, 2000	Klein et al.
44	6,153,886	Nov. 28, 2000	Hagiwara et al.
45	6,160,622	Dec. 12, 2000	Dirksen et al.
46	6,165,656	Dec. 26, 2000	Tomimatu
47	6,177,330	Jan. 23, 2001	Yasuda
48	6,197,679	Mar. 6, 2001	Hattori
49	6,255,189	Jul. 3, 2001	Muller et al.
50	6,301,001	Oct. 9, 2001	Unno
51	6,323,560	Nov. 27, 2001	Narimatsu et al.
52	6,342,735	Jan. 29, 2002	Colelli et al.
53	6,420,791	Jul. 17, 2002	Huang et al.
54	6,420,971	Jul. 16, 2002	Leck et al.
55	6,421,124	Jul. 16, 2002	Matsumoto et al.
56	6,462,818	Oct. 8, 2002	Bareket
57	6,476,920	Nov. 5, 2002	Scheiner et al.
58	6,486,954	Nov. 26, 2002	Mieher et al.
59	6,522,406	Feb. 18, 2003	Rovira et al.
60	6,590,656	Jul. 8, 2000	Xu et al.
61	6,611,330	Aug. 26, 2003	Lee et al.
62	6,633,831	Oct. 14, 2003	Nikoonahad et al.

U.S. Department of Commerce, Patent and Trademark INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Atty. Docket No.	Application No.
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OTHER ART – con. (Including Author, Title, Date, Pertinent Pages, Etc.)

<i>S</i>	99	"A New Technique for Multiple Overlay Check", Auzino et al., Microelectronic Engineering, p. 41-42. (Abstract)
<i>E</i>	100	"Alignment Mark Optimization to Reduce Tool and Wafer-Induced Shift for XTRA-1000", Ina et al., Japanese Journal of Applied Physics, vol. 38, no. 12B, p. 7065-70. (Abstract)
<i>W</i>	101	"Towards the Optimal Design of Binary Optical Elements with Different Phase Levels Using a Method of Phase Mismatch Correction", Kodate et al., Trends in Optics and Photonics, vol. 41, p. 174-6. (Abstract)
Examiner <i>M. J. Alaudin</i>	Date Considered	<i>6/7/04</i>
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